



From Horse OU3

639708

DRAFT

Operation and Maintenance Plan

Area of Concern 7 (AOC 7)
Operable Unit 3 (OU3)
Iron Horse Park
Superfund Site
Billerica, Massachusetts



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woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

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Appendix A: Inspection Form

1. INTRODUCTION

Woodard & Curran, Inc. (W&C) has prepared this Draft Operation and Maintenance (O&M) Plan on behalf of BNZ Materials, Inc. (BNZ), a Settling Defendant (Settling Defendant) responsible for remedial activities at Area of Concern 7 (AOC 7) within Operable Unit 3 (OU3) at the Iron Horse Park Superfund Site located in Billerica, Massachusetts. AOC 7 encompasses three former waste lagoons, referred to as the Asbestos Lagoons, which were built to receive discharge of asbestos-containing wastewater during historic manufacturing processes at the property. BNZ, the current owner of the property, is responsible for implementing the selected remedy for AOC 7 in accordance with the United States Environmental Protection Agency's (EPA) Record of Decision (ROD) for OU3 dated September 30, 2004. In accordance with the Remedial Design / Remedial Action (RD/RA) Statement of Work (SOW), this Draft O&M Plan has been prepared as a component of the Remedial Design at the Pre-Final (95%) Design stage. The purpose of the O&M Plan is to ensure the long-term continued effectiveness of the remedy and conformance with the Performance Standards.

Under the Post-Closure Requirements of the Massachusetts Solid Waste Management Regulations (310 CMR 19.142), monitoring and maintenance activities must be conducted following placement of the final cover system. The post-closure period is established as 30 years in the regulations, but may be extended or reduced based on a determination by the Massachusetts Department of Environmental Protection (MassDEP) that a longer or shorter time is necessary to protect public health, safety, and the environment. This report describes the inspection and maintenance activities that will be performed at AOC 7 to ensure the proper operation of the final cover system, the gas venting system, the drainage system, and maintenance of the monitoring well network.

In addition to 310 CMR 19, Woodard & Curran (W&C) relied on the following references in preparation of this O&M Plan:

- *Landfill Technical Guidance Manual*. (MassDEP Division of Solid Waste Management, Revised May 1997).
- *Massachusetts Stormwater Management Policy*. (MassDEP, Revised March 1997).
- *Stormwater Management Handbooks* (MassDEP, February 2008).
 - Volume One: Stormwater Policy Handbook
 - Volume Two: Stormwater Technical Handbook

This document provides a general description of the normal operation and maintenance activities that will be employed at the Site. In addition, a presentation of potential operational problems, an operational safety plan, an annual O&M budget, and the record keeping and reporting requirements are provided in this report.

2. ROUTINE OPERATION & MAINTENANCE ACTIVITIES

This section describes the routine operation and maintenance activities to be performed at AOC 7 after remedy implementation is complete. As stated in the SOW, the selected remedy includes capping lagoon materials, erecting a fence around the capped material, and groundwater sampling; the nature of the selected remedy does not require any O&M activities to be performed during remedy implementation, which is anticipated to start and finish within a single standard construction season. Hence, all O&M activities described herein are "post-construction" or "post-closure" O&M activities.

As stated in the Demonstration of Compliance Plan (DCP), O&M activities will be conducted in accordance with the Post-Closure Requirements set forth in 310 CMR 19.142(5). These post-closure requirements which are relevant and appropriate to AOC 7 are as follows:

- Take corrective actions to remediate and/or mitigate conditions that would compromise the integrity and purpose for the final cover;
- Maintain the integrity of the liner system and the final cover system;
- Monitor and maintain the environmental monitoring systems;
- Maintain access roads;
- Maintain gas venting systems;
- Protect and maintain surveyed benchmarks; and
- Have the cap inspected by a third-party consulting Massachusetts Registered Professional Engineer, or other qualified professional approved by MassDEP, experienced in solid waste management, in accordance with the post-closure plan.

The following sections describe the routine and corrective O&M activities and inspections that will be performed to meet these requirements.

2.1 ROUTINE INSPECTIONS

Routine inspections will be performed on an annual basis and will include the activities listed on the Inspection Checklist provided as Table 2-1. Routine inspections will be conducted by a third-party consulting Massachusetts Registered Professional Engineer, or other qualified professional approved by MassDEP, experienced in solid waste management. An inspection form to be filled out during routine inspections is included as Appendix A. The form lists inspection points and items/checkpoints for each inspection. Each inspection point shall be graded with one of four results after inspection:

- Excellent – a grade of "excellent" indicates that the inspection point meets all requirements and all components are in excellent condition;
- Good – a grade of "good" indicates that the inspection point meets all requirements and that all system components are in good condition;
- Fair – a grade of "fair" indicates that the inspection point is functional and serves its intended purpose, but certain components are showing wear and may need corrective maintenance in the near future;
- Poor – a grade of "poor" indicates that the inspection point is either malfunctioning or that a component of the system is not serving its intended purpose; immediate corrective maintenance is required.

After each inspection point is graded, the inspection form provides space for the inspector to note any other observations and provide recommendations if any are needed.

2.2 ROUTINE SYSTEM MONITORING

Routine monitoring at AOC 7 will include environmental monitoring and gas monitoring. Environmental monitoring activities (i.e. groundwater sampling) will be conducted in accordance with the Environmental Monitoring Plan (EMP). The party conducting routine inspections as described in Section 2.1 may also be the same person or party conducting routine system monitoring activities.

Gas monitoring will be conducted at the passive gas pipes using a gas meter or meters capable of measuring volatile organic compounds (VOCs), methane (CH₄), oxygen (O₂), carbon dioxide (CO₂), and hydrogen sulfide (H₂S). Gas monitoring will initially be conducted on a quarterly basis after cap construction is complete. If conditions appear to be stable after four rounds of gas monitoring, the inspection frequency may be reduced upon EPA and MassDEP approval.

2.3 ROUTINE SYSTEM MAINTENANCE

Routine maintenance activities will be conducted to maintain the stormwater drainage system. In accordance with the MassDEP Stormwater Management Handbook Best Management Practices, the side slopes, embankment, and emergency spillway of a dry detention basin should be mowed at least twice per year. Any trash and debris present on the cap or in the detention basin should be removed at this time. Accumulated sediment should be removed from the detention basin as necessary, at least once every 10 years or when the basin is 50% full.

No other systems of the remedial design are anticipated to require routine system maintenance.

2.4 CORRECTIVE MAINTENANCE

Corrective maintenance activities may be required if problems are discovered during a routine inspection. Typical problems that may arise include the accumulation of sediments or obstructions in the detention basin or drainage swales, subsidence or erosion to basin or cap sideslopes, subsidence or damage to the basin outlet structure, dying vegetation, maintenance road erosion or potholes, vandalism to the perimeter fence or signage, gas vent subsidence, or monitoring well subsidence. If any of these or other issues arise where corrective maintenance is needed, the corrective maintenance or repair will be performed to the greatest extent practicable in a prompt manner. Corrective maintenance activities include but are not limited to:

- Removal of obstructions or excessively accumulated sediments from the drainage swales, detention basin, or around the cap perimeter;
- Repair of subsided slopes, areas of settlement, or erosion gullies on detention basin sideslopes or the asbestos lagoon cap cover (repairs consist of filling with topsoil and reseeding);
- Removal of excessive tree growth that threatens to impair the stormwater drainage system or asbestos lagoon cap function;
- Reseeding areas of dead/dying vegetation to prevent erosion;
- Repair of damage to the detention basin outlet structure;

- Repair of washouts or erosion to site maintenance roads;
- Repairing sections or repaving the entirety of the parking area as necessary to maintain a barrier over underlying soils;
- Repairs to perimeter fence or replacement of signs if they are missing or illegible;
- Repairs to the monitoring well network as necessary; and,
- Repairs or retrofits to the gas venting network as necessary.

Corrective maintenance activities are not scheduled for a regular frequency, but rather will be conducted on an as-needed basis.

Table 2-1
Operation Maintenance Plan Inspection Checklist
Iron Horse Park Superfund Site AOC 7 / OU 3

Inspection Point	Requirement	Frequency
Final cap cover	The cap cover will be inspected for signs of erosion. Inspectors will inspect slopes for erosion gullies and the bottom perimeter for sediment deposits. The cover materials will also be inspected for signs of vandalism or damage.	Annual
Gas venting system	The gas vents will be inspected for functionality, noting whether any vents appear to be broken, leaning, or have any apparent signs of vandalism or other damage.	Annual
On-cap drainage swales	The drainage swales will be inspected for their functionality and integrity. Inspectors will check for erosion, gullies, areas of ponding, sediment and debris.	Annual
	A one-time post-closure visit will be made during and after a substantial storm to check that the swales function as designed.	One-time
Stormwater detention basin	The detention basin will be inspected for its functionality and integrity. Inspectors will check for damage to inlet and outlet structures, eroded or barren areas, basin erosion, embankment erosion, subsidence or tree growth, and the accumulation of sediment.	Annual
	A one-time post-closure visit will be made during and after a substantial storm to check that the basin will empty out completely after 24 hours, and that the detention basin and outlet structure function as designed.	One-time
Leachate generation	The bottom perimeter of the cap will be visually inspected for signs of breakthrough or leachate generation from beneath the cap.	Annual
Odor generation	The inspector will note the presence of any odors originating from the cap, also noting weather conditions including temperature, wind, and precipitation.	Annual
Cover settlement/subsidence	A visual inspection will be conducted, noting any locations of obvious settlement, heaving, or ponding on the asbestos lagoon cap.	Annual
Vegetative cover	The vegetative cover on the asbestos lagoon cap will be inspected. Inspectors will note the location and size of erosion gullies, areas of minimal or dying vegetation, and the presence of any large woody plants.	Annual
Monitoring wells	Inspectors will assess the standpipe integrity of the monitoring well network, and confirm the presence of standpipe or PVC lids and locks where applicable.	Annual
Parking lot pavement	Inspectors will assess the integrity and continuity of the paved parking area south of the lagoons, and note any areas of heaved or cracked or missing pavement.	Annual
Site security	Inspectors will visually assess the fence, gates, and signage. The chain link fence around the cap and drainage system will be assessed for continuity and integrity. The vehicle and man-access gates in the fence shall be operable, and locked to prevent unauthorized access. The posted signage on the perimeter fence shall be present and visible. The inspector will note any evidence of trespass, attempted trespass, or vandalism.	Annual
Maintenance road	The condition of the site maintenance road will be inspected for washouts, erosion gullies that would prohibit access, or excess vegetation surfacing through the road.	Annual

3. CONTINGENCY OPERATION & MAINTENANCE

A number of the potential problems that could occur to the remedial system have been identified, along with the appropriate corrective maintenance action, as described in Section 2.4. Due to the nature of the remedial action and required O&M activities, no contingency O&M activities are proposed.

4. OPERATIONAL SAFETY PLAN

All inspections, operations and maintenance work at AOC 7 shall be performed in accordance with the Site Health and Safety Plan (HASP) submitted under cover of the Project Operations Plan (POP) for the Site. Safety should be emphasized and practiced during all site monitoring activities. Wearing the proper personal protective equipment (PPE) as described in the HASP and using common sense can prevent many injuries from occurring. Specific hazards anticipated at the Site during the post-closure time period include vehicular traffic at the BNZ facility, slip/trip/fall hazards, weather extremes, and environmental hazards such as poison ivy and insects. Refer to the HASP for additional information including emergency and health & safety contacts, job-hazard analyses, and appropriate levels of PPE for various tasks.

5. OPERATION AND MAINTENANCE BUDGET

An annual O&M budget will be provided with the final O&M Plan to be submitted within 30 days of the 75% construction completion date.

6. RECORD KEEPING AND REPORTING

6.1 RECORD KEEPING

Inspection forms, maintenance records, and copies of all O&M reports will be kept on file in Woodard & Curran's Andover, Massachusetts office. Laboratory data reports from environmental monitoring activities will be maintained at Woodard & Curran's Andover office. A consolidated electronic database of historical laboratory results will be maintained by Woodard & Curran.

Woodard & Curran's personnel records regarding OSHA training and medical monitoring requirements are kept in a central database maintained by Woodard & Curran's health and safety officers.

Any incidents occurring during O&M activities will be managed and reported as described in the HASP, and incident reports will be filed using the form provided in Appendix H of the HASP.

6.2 REPORTING

Annual reports will be submitted by Woodard & Curran to EPA and MassDEP for all O&M activities (excluding environmental monitoring). These reports will identify all of the O&M activities that were performed since the previous report and those activities that will be performed in the time period until the next report. The reports will also include a summary of the results of any O&M inspections or evaluations completed since the last report, and they shall identify any corrective measures that have been or need to be completed. Environmental monitoring reporting will be conducted in accordance with the schedule provided in the EMP.

7. MONITORING WELL MAINTENANCE

Monitoring wells will be inspected before each monitoring event and maintained or repaired as necessary. Items covered in a routine inspection include an assessment of the standpipe casing and inner PVC integrity, and confirming the presence of well caps, j-plugs, and locks. If a well can not be utilized because it is damaged beyond repair or is otherwise unusable, it will be promptly abandoned per MassDEP well abandonment procedures. If the environmental monitoring program requires continued monitoring of the well, the monitoring well may be replaced (i.e. newly constructed) after consultation with EPA and MassDEP as to its necessity.

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APPENDIX A: INSPECTION FORM



POST-CLOSURE INSPECTION FORM **IRON HORSE PARK SUPERFUND SITE AOC 7 / OU3**

Date: _____
 Time: _____

Weather: _____
 Inspector: _____

Grading System: Excellent (E); Good (G); Fair (F); Poor (P)

Inspection Point	Requirement	Grade	Notes/Observations	Recommendations
Final cap cover	The cap cover will be inspected for signs of erosion. Inspectors will inspect slopes for erosion gullies and the bottom perimeter for sediment deposits. The cover materials will also be inspected for signs of vandalism or damage.			
Gas venting system	The gas vents will be inspected for functionality, noting whether any vents appear to be broken, leaning, or have any apparent signs of vandalism or other damage.			
On-cap drainage swales	The drainage swales will be inspected for their functionality and integrity. Inspectors will check for erosion, gullies, areas of ponding, sediment and debris.			
	A one-time post-closure visit will be made during and after a substantial storm to check that the swales function as designed.			
Stormwater detention basin	The detention basin will be inspected for its functionality and integrity. Inspectors will check for damage to inlet and outlet structures, eroded or barren areas, basin erosion, embankment erosion, subsidence or tree growth, and the accumulation of sediment.			
	A one-time post-closure visit will be made during and after a substantial storm to check that the basin will empty out completely after 24 hours, and that the detention basin and outlet structure function as designed.			
Leachate generation	The bottom perimeter of the cap will be visually inspected for signs of breakthrough or leachate generation from beneath the cap.			
Odor generation	The inspector will note the presence of any odors originating from the asbestos lagoon cap, also noting weather conditions including temperature, wind, and precipitation.			
Cover settlement / subsidence	A visual inspection will be conducted, noting any locations of obvious settlement, heaving, or ponding on the asbestos lagoon cap.			
Vegetative cover	The vegetative cover on the asbestos lagoon cap will be inspected. Inspectors will note the location and size of erosion gullies, areas of minimal or dying vegetation, and the presence of any large woody plants.			
Monitoring wells	Inspectors will assess the standpipe integrity of the monitoring well network, and confirm the presence of standpipe or PVC lids and locks where applicable.			
Parking lot pavement	Inspectors will assess the integrity and continuity of the paved parking area south of the lagoons, and note any areas of heaved or cracked or missing pavement.			
Site security	Inspectors will visually assess the fence, gates, and signage. The chain link fence around the cap and drainage system will be assessed for continuity and integrity. The vehicle and man-access gates in the fence shall be operable, and locked to prevent unauthorized access. The posted signage on the perimeter fence shall be present and visible. The inspector will note any evidence of trespass, attempted trespass, or vandalism.			
Maintenance road	The condition of the site maintenance road will be inspected for washouts, erosion gullies that would prohibit access, or excess vegetation surfacing through the road.			

P.E. Signature: _____
 P. E. Stamp: _____

Date: _____